

Note

If there is no clear cut complaint and possible cause, it is recommended to complete the quick test without tester first. The test is performed at workshop temperature.

During all tests the vehicle engine should be running (except test step 1) at idle. The jets for lateral venting should be opened, the doors and windows closed. Note that the operating period of the regulating valve from max. cold to max. warm amounts to approx. 1 minute.

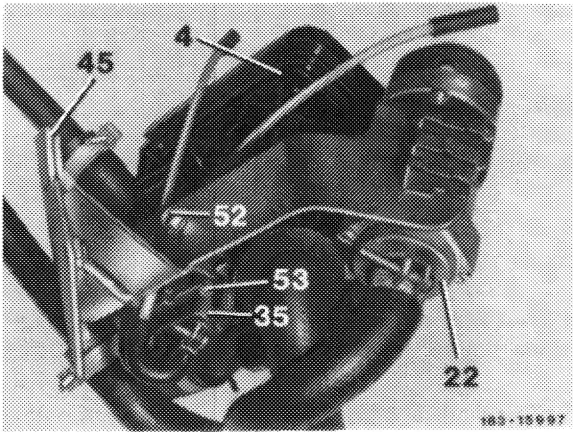
Test program

Test step 1

Check temperature switch (35) in regulating valve (cold engine lock) for function.

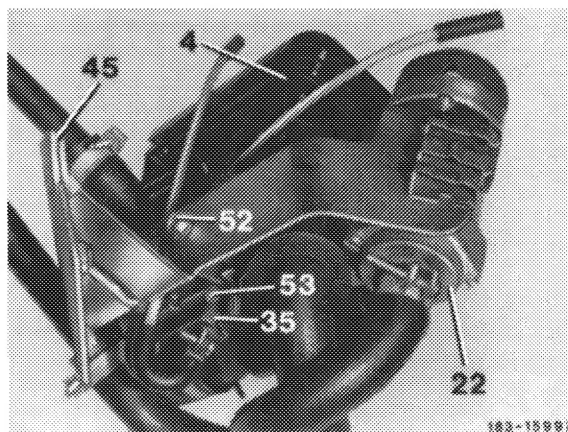
- 1 Switch on ignition, but do not yet start engine.
- 2 Actuate pushbutton switch in the following sequence, while paying attention to respective function of blower.

Pushbutton switch	Blower
1. "DEF"	should start
2. "OFF"	off
3. "AUTO-HI"	off
4. "AUTO-HI" and start engine	should start not before approx. 40 °C (104 °F) coolant temperature



Remedy following indication of defect

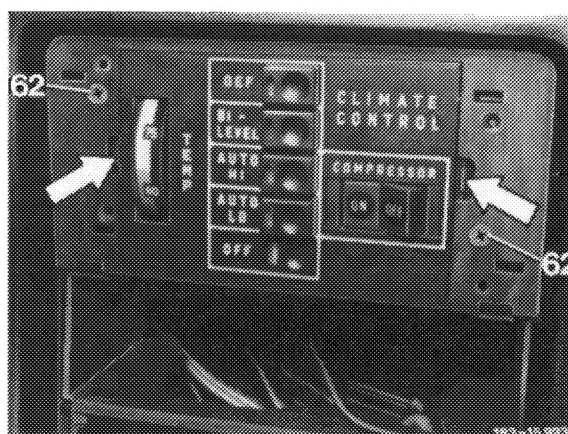
- 1 Check vacuum system according to function diagram 2 (83–604).
- 2 Pull black vacuum line from temperature switch (35) and check for vacuum. If there is no vacuum, test vacuum circuit I, II, III, IV and VI (refer to job no. 83–620, 622 and 624).



Test step 2

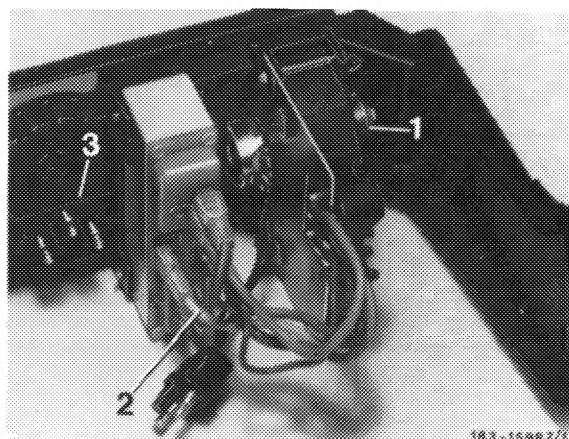
Push button “DEF” and run engine up to operating temperature. Then run engine at approx. 2500/min.

System moves to full heating capacity. Warm air flows out of defroster nozzle and out of nozzles for lateral ventilation. Blower runs at max. stage, leg-room flaps are closed. Refrigerant compressor should run along (except at evaporator temperatures below 2 °C (36 °F). “ON/OFF” switch has no influence on refrigerant compressor.



Remedy following indication of defect

- 1 Test vacuum system according to function diagram 9 (83–604).
- 2 Test vacuum circuit III and IV (83–622).
- 3 Test electrical system according to wiring diagram 10 (83–605).
- 4 Test with voltmeter whether at terminal 8 of plug connection (5) for tester at least 10 volts are available.
- 5 Test diode in 6-point coupling of harness of push-button switch (2).

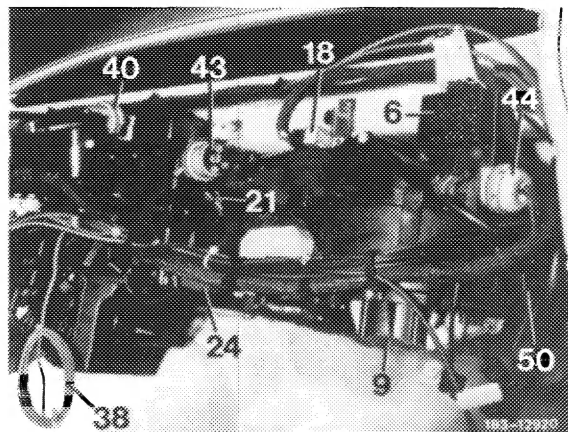


- 1 Temperature dial
- 2 Pushbutton switch
- 3 “ON/OFF” switch refrigerant compressor

6 Connect new amplifier (6) for tryout.

Layout blower with amplifier

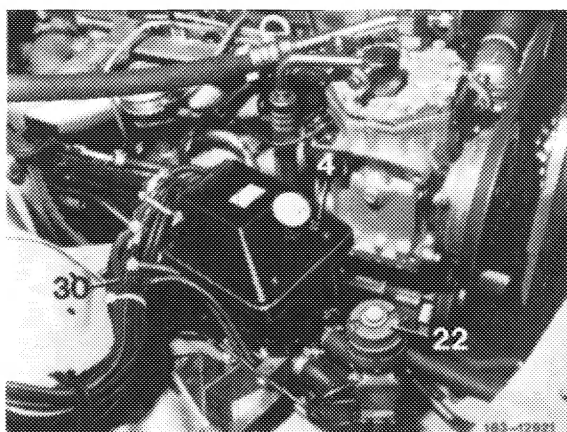
- | | |
|--|---|
| 6 Amplifier | 40 Vacuum element center jet |
| 9 Blower | 43 Vacuum element main flap |
| 18 Double contact relay | 44 Vacuum element fresh air-recirculated air flap |
| 21 Temperature switch for heating water pump | 50 Air jet nozzle |
| 38 Specified leak point | |



7 Exchange regulating valve (4).

Layout regulating valve with heating water pump

- | |
|-----------------------|
| 4 Regulating valve |
| 22 Heating water pump |
| 30 Vacuum lines |

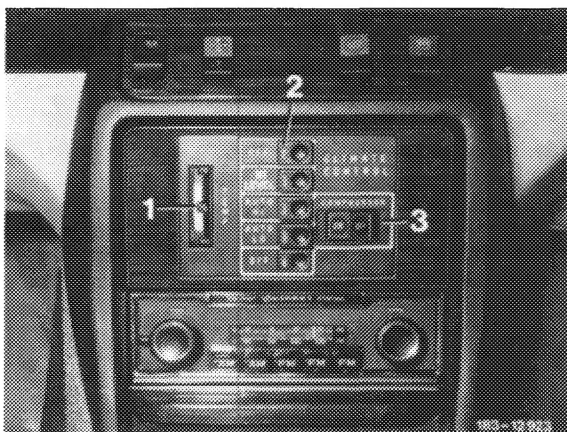


Test step 3

Push button "BI-LEVEL" and set temperature dial to 65 °F.

Blower switches back by one to two steps compared with "DEF".

All the air enters legroom via defroster jets, via jets of lateral ventilation and in addition at center jets during "cooling".

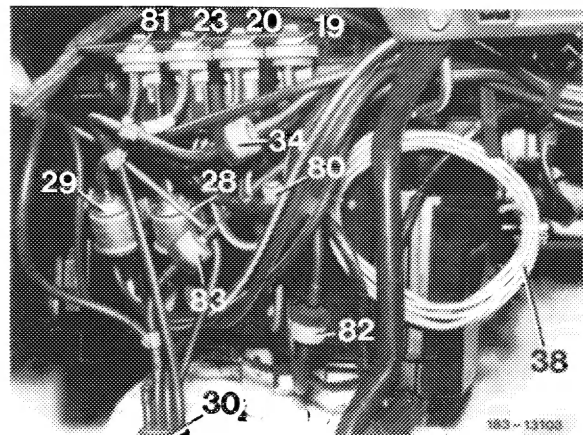


The outlet temperature is controlled depending on in-car temperature, i.e. in this case following a previous "DEF" test the outlet temperatures should be clearly lower than during "DEF" test. The refrigerant compressor runs along except at evaporator temperatures below 2 °C (36 °F), independent of the position of the "ON/OFF" switch of refrigerant compressor.

Remedies following indication of defect

- 1 Test vacuum system according to function diagram 6 and 7 (83–604).
- 2 Switch (23) for refrigerant compressor activated with vacuum.
- 3 Test vacuum circuit III and IV (83–622).
- 4 Test electrical system according to wiring diagram 7, 8 and 8 a (83–605).
- 5 Check refrigerant charge on sightglass of receiver dehydrator.
- 6 Check switch (23) for refrigerant compressor.

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only)
- 82 Check valve
- 83 Check valve

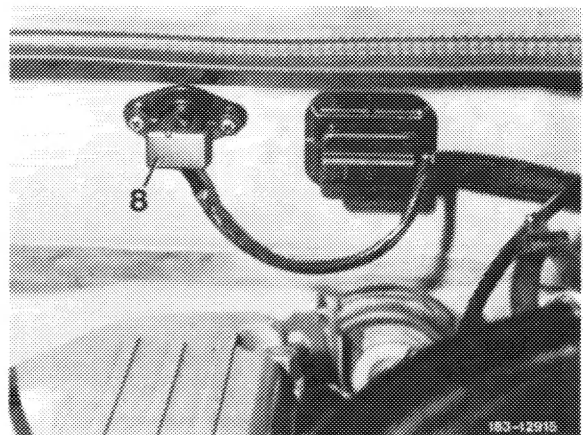


Test step 4

Push button "AUTO-HI" and move "ON/OFF" switch of refrigerant compressor into position "ON". Pull off 2-point plug on ambient temperature sensor (8).

System should run up to full heating capacity. Warm air will flow out of legroom openings and out of jets for lateral ventilation. The center jets and the flaps for the defroster jets are closed. When attaining full heating capacity, the blower runs in second stage "HI".

Ambient temperature sensor



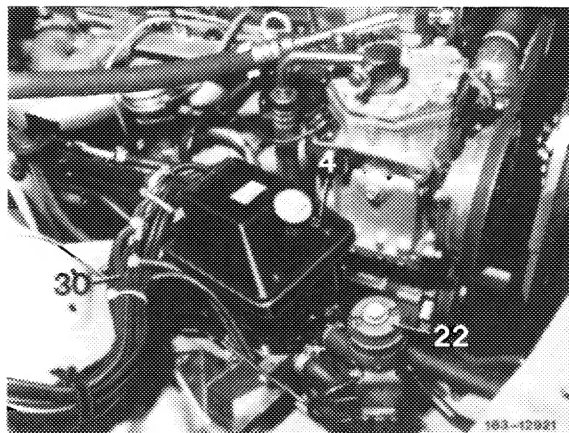
Remedies following indication of defect

- 1 Test vacuum system according to function diagram 5 (83–604).
- 2 Test vacuum circuit I, II, III, IV and V (83–620, 622 and 624).
- 3 Test electrical system according to wiring diagram 16 (83–605).

4 Connect regulating valve (4) for tryout.

Layout regulating valve with heating water pump

- 4 Regulating valve
- 22 Heating water pump
- 30 Vacuum lines

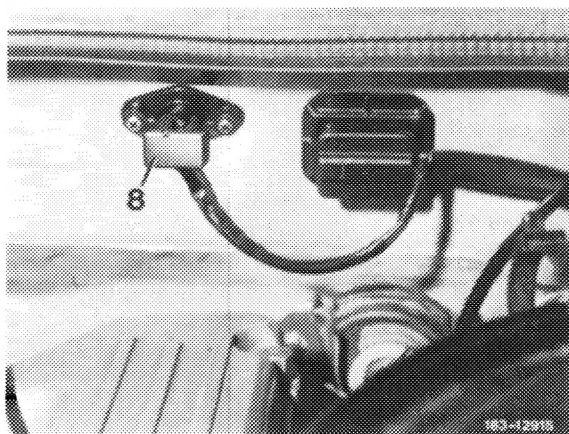


Test step 5

Reattach 2-point plug to ambient temperature sensor (8) and set temperature dial to 65 °F (up to stop). For visual checkup of fresh air-recirculated air flap, remove cover below right (83-602).

Layout ambient temperature sensor

- 8 Ambient temperature sensor



The system is now running at "cooling", with the blower speed switched down in steps until the mode change is attained. The center nozzles will be opened and the legroom flaps will slowly close.

The air outlet temperatures will drop and the blower will again be switched up in steps. With a previously well heated vehicle interior, > 30 °C (86 °F) the system should move to recirculated air mode.

Remedies following indication of defect

- 1 Test vacuum system according to function diagram 3 (83-604).
- 2 Test vacuum circuit I, II, III and VI (83-620 and 622).
- 3 Test electrical system according to wiring diagram 6 (83-605).

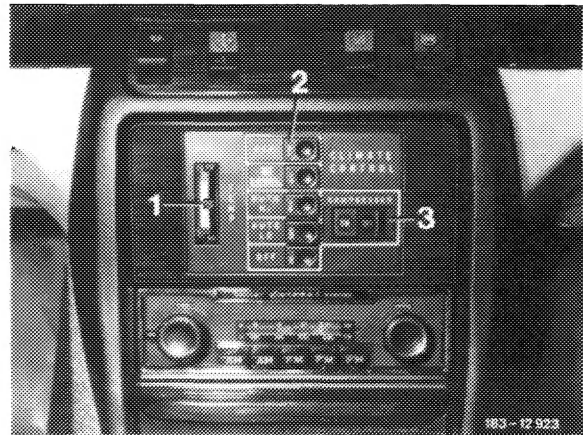
Test step 6

Move "ON/OFF" switch (3) of refrigerant compressor in position "OFF".

The legroom flaps will be opened and the fresh air-recirculated air flap moves into position 100 % fresh air.

Layout of control unit

- 1 Temperature dial
- 2 Pushbutton switch
- 3 "ON/OFF" switch refrigerant compressor



Remedies following indication of defect

- 1 Test vacuum system according to function diagram 4 (83-604).
- 2 Test vacuum circuit I, II, III, IV and VI (83-620, 622 and 624).
- 3 Test electrical system according to circuit diagram 4 (83-605).

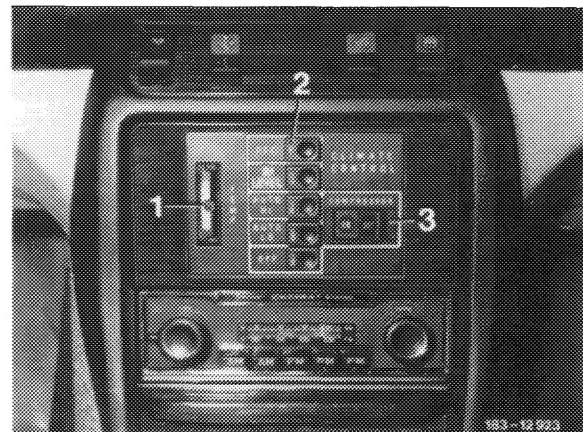
Test step 7

Move "ON/OFF" switch (3) of refrigerant compressor into position "ON".

Legroom flaps are again closed.

Layout of control unit

- 1 Temperature dial
- 2 Pushbutton switch
- 3 "ON/OFF" switch refrigerant compressor



Remedies following indication of defect

- 1 Test vacuum system according to function diagram 3 (83-604).
- 2 Test vacuum circuit I, II, III and VI (83-620, 622 and 624).

Test step 8

Push button "AUTO-LO", set refrigerant compressor switch to position "ON" and temperature dial to 65 °C.

Blower speed will clearly drop when switching to "LO" in relation to former "HI".

Remedies following indication of defect

- 1 Test vacuum system according to function diagram 2 and 3 (83–604).
- 2 Test vacuum circuit I, II, III, IV and VI (83–620, 622 and 624).
- 3 Test electrical system according to wiring diagram 2 (83–605).

Test step 9

Set temperature dial to 85 °F (pushbutton at "AUTO-LO").

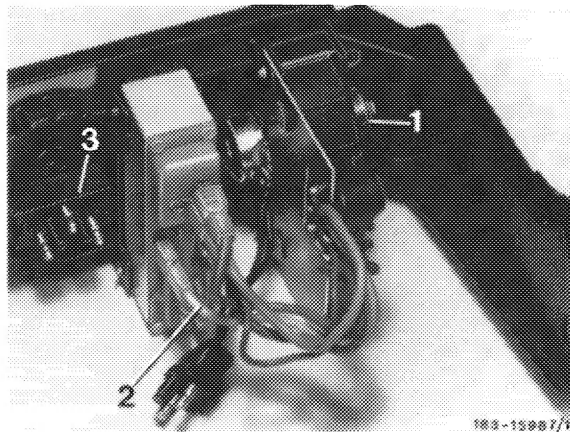
Air outlet temperatures are increasing, blower speed is reduced in steps. When the mode change is attained (approx. 1 minute, closing of center nozzles and simultaneous opening of legroom flaps), the blower will again be switched up in steps depending on ambient temperature conditions.

Remedies following indication of defect

- 1 Test vacuum system according to function diagram 5 (83–604).
- 2 Test vacuum circuit I, II, III, IV and V (83–620, 622 and 624).
- 3 Test electrical system according to wiring diagram 5 (83–605).

4 If system remains in position "cooling", test diode in pushbutton switch (2). Connect new amplifier or new regulating valve for tryout.

- 1 Temperature dial with potentiometer
- 2 Pushbutton switch
- 3 "ON/OFF" switch refrigerant compressor



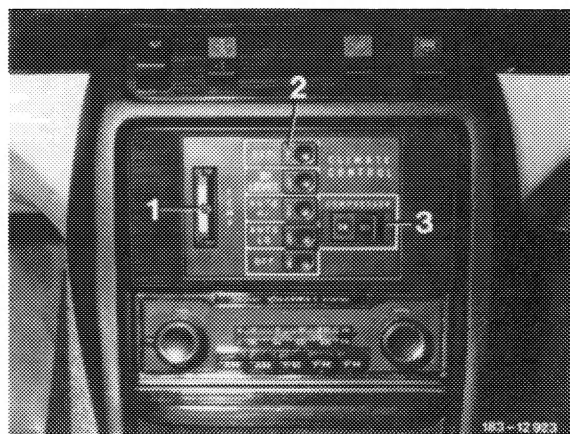
Test step 10

Push button "OFF".

Blower and refrigerant compressor are switched off after approx. 10 seconds at the latest.

Layout of control unit

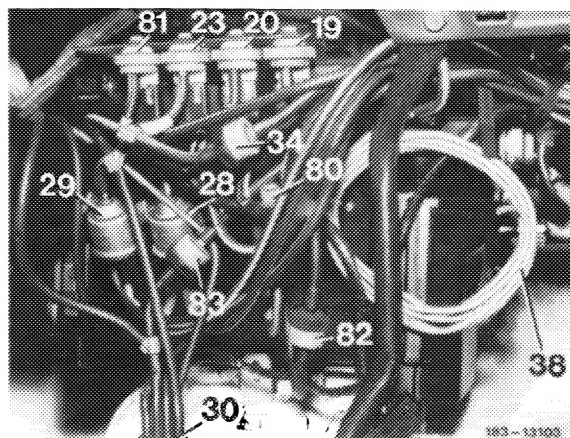
- 1 Temperature dial
- 2 Pushbutton switch
- 3 "ON/OFF" switch of refrigerant compressor



Remedies following indication of defect

- 1 Test vacuum system according to function diagram 1 (83-604).
- 2 Test vacuum circuit I, II and VI (83-620 and 624).
- 3 Test black vacuum line from connection 3 of pushbutton switch to connection 1 of regulating valve or vent line (39) for passage. Possibly no ventilation via pushbutton switch connection 3.
- 4 Test electrical system according to wiring diagram 1 and 1 a (83-605).
- 5 Pull plugs from switches (19, 20 and 23), test with ohmmeter, no passage.

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only)
- 82 Check valve
- 83 Check valve



Test step 11

Start engine and accelerate shortly several times (coolant temperature $> 40^{\circ}\text{C}$, 104°F). This will evacuate the vacuum system.

Move automatic climate control to "AUTO-HI", blower should start.

Switch off ignition. After approx. 10 minutes, switch on ignition again without starting vehicle engine. Blower should start immediately (main switch (19) still activated with a vacuum). If the blower is not starting, a leak in line system is responsible.

Remedy following indication of defect

- 1 Test vacuum system (83–614 to 628).